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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Antarctic Weather

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A SCIENCE SERVICE PUBLICATION

GEOPHYSICS

Foresee Glacial Advance

Earth is now in an interglacial era, but new glacial advance can be expected within a few centuries, according to new theory proposed to account for ice ages.

► THE WORLD is now between two Ice Ages. Another glacial advance can be expected within a few centuries, two scientists have proposed.

Some hundreds of years from now, temperature decreases will mark the start of a new glacial period. At that time, the Arctic Ocean, which seems to have been warming up recently, will be entirely ice free, they predict.

Dr. Maurice Ewing, director of Columbia University's Lamont Geological Observatory, and Dr. William L. Donn, Columbia research associate and Brooklyn College professor of geology and meteorology, announce their new theory to account for Ice Ages in *Science* (June 15).

The scientists also propose an explanation for another kind of change, that from long-term warm to cold climates. After a relatively abrupt change, the succeeding climate lasts millions of years, compared to the thousands of years for Ice Ages.

"No external influences or catastrophic events are required" to start or stop Ice Ages or to switch from very long periods of warm to cold climates, according to their theory.

Some mechanical process such as a slipping of the earth's crust relative to the interior, they suggest, has caused the poles to move, resulting in conditions very favorable for abrupt development of a long-term, cold climate after a warm one.

The successive warm and cold periods that follow, as they did in the Pleistocene Ice Ages, are believed by Drs. Ewing and Donn to have resulted primarily from alternations of an ice-covered or ice-free Arctic Ocean surface.

As long as the poles maintain their present locations, the world will continue to have a Pleistocene-like, or glacial, climate, and the weather of about the past 11,000 years can be considered another interglacial stage.

For the last few thousand years, they point out, temperatures have remained about as high as the highest value reached during any previous interglacial stages.

These temperatures are regulated by the surface layers of the Atlantic and Arctic Oceans, not external conditions. An ice-free Arctic Ocean would result in a "marked increase" in exchange of water between the Arctic and Atlantic, warming the former and cooling the latter.

An open Arctic would provide moisture for glacier growth, but would eventually reduce sea level, resulting in a sharp decrease of the inflow of warm Atlantic water into the Arctic Ocean. The cooling effect

of the built-up glaciers would eventually allow a new Arctic ice sheet to form.

Facts about early man in the Americas support their new Ice Age theory, Drs. Ewing and Donn point out. Early man is thought to have reached Alaska from Siberia in large numbers somewhat more than 11,000 years ago, crossing the land bridge, then joining the two continents.

Warm periods followed by cold ones during the Pleistocene, although measured in thousands of years, happened much too fast to be related to movements of the pole in and out of the Arctic region. Such polar migrations could, however, account for the "change from a warm equable climate to the glacial climates of the Pleistocene."

Drs. Ewing and Donn state that the poles wander only by a differential movement between the earth's outer shell and interior, resulting in different points on the surface being in the position of the poles.

Information gained from studying samples of deep-sea ocean sediments is used to support their arguments for the new theory. They have also considered the effect on weather patterns of an ice-free Arctic.

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GEOPHYSICS

Antarctic Weather Often Deceptive

See Front Cover

► MOVING CLOUDS of chiffon reflected in snow-covered, 13,200-foot high Mt. Erebus, and ice shattered like glass, skirted by a dark area of open water, give the appearance of a mild day at McMurdo Sound, Antarctica.

It was, except that Task Force 43 men had learned from experience that a sky such as shown in the photograph on the cover of this week's *SCIENCE NEWS LETTER* meant a great deal of turbulence was brewing. Extreme high winds aloft caused the clouds to fall into these beautiful formations. Usually 24 hours later furious blizzard follows.

A photographer on the Coast Guard ice-breaker, *East Wind*, snapped the picture as the ship, busy breaking ice in the Sound, passed this point 20 miles from the mountain. Not far from Mt. Erebus, construction work was in progress on the Air Operation Facility and the Auxiliary Camp at Hut Point, Ross Island.

The Task Force was in Antarctica making preparations for the International Geophysical Year.

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HARVARD ASTRONOMY PROFESSOR—Dr. Cecelia Payne-Gaposchkin has been appointed professor of astronomy at Harvard University, the first woman to attain full professorship there through regular faculty promotion.

ASTRONOMY

First Woman Professor Appointed at Harvard

► THE FIRST WOMAN to be made a full professor at Harvard University through regular faculty promotion is Dr. Cecelia Payne-Gaposchkin, an authority on variable stars, who has been appointed professor of astronomy, Dean McGeorge Bundy announced in Cambridge, Mass.

Since 1938, Dr. Payne-Gaposchkin has been Phillips Astronomer in the Harvard College Observatory and lecturer on astronomy. She and her husband, Dr. Sergei I. Gaposchkin, made one of the most extensive surveys ever undertaken of variable stars over the entire sky.

One other woman, the anthropologist Cora Du Bois, holds the rank of full professor at Harvard, but hers is a professorship created especially to be occupied by a woman scholar of distinction. She holds the Samuel Zemurray Jr. and Doris Zemurray Stone-Radcliffe Professorship.

Dr. Payne-Gaposchkin has written many books, several in collaboration with her husband. Their most recent jointly written book is "Pioneers in Astronomy," to be published soon.

Among her recent books are "Stars in the Making," "Introduction to Astronomy," and "Variable Stars and Galactic Structure." Her latest book, "The Galactic Novae," is now in press.

A native of Wendover, England, Dr. Payne-Gaposchkin became an American citizen in 1931.

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BIOCHEMISTRY

Gene Now Obsolete Term

Although by definition a gene is still the unit of heredity, scientists no longer believe it is a bit of matter that determines a specific characteristic.

► **THE GENE** as the carrier of a unit characteristic in heredity has become a mere ghost of its former self.

Once it was pictured as the unit of chromosome structure, much like an individual bead in a string of beads. It is still, by definition, the unit of heredity.

However, it is no longer believed to be a blob of matter that will confer blue eyes or extra fingers upon the individual who happens to receive one specific section of a chromosome in the lottery of heredity.

As new techniques of scientific observation reveal fine structure of the chromosomes, which are the heredity-bearing parts of the living cell, the mechanism by which plants and animals reproduce their own kind is found to be more and more complex.

The imaginary model that likened genes within the chromosome to a string of beads has had to give way to one more like a piece of rope. Coiled and twisted strands that are shown by the optical microscope, or suggested by structures seen there, can be magnified by the electron microscope.

Here the individual strands are seen to be each composed of many bundles of fibrils. Each fibril has an outside shell around a central core. Whether the living fibril is like an insulated wire or a hollow piece of macaroni has not been found.

Dimensions of these fibrils do not correspond to those calculated by the scientists who elaborated the gene theory a generation ago.

So much has the idea of the gene changed that the word is not used on the program of the symposium on the chemical basis of heredity held at the Johns Hopkins University, Baltimore, by the McCollum-Pratt Institute, with the cooperation of the Atomic Energy Commission. Instead, the physicists and geneticists who joined forces at the symposium to discuss the latest findings on the subject have submitted the term "unit of heredity."

A handicap to scientists trying to identify objects seen through the two kinds of magnifying devices seems to be that some of the key structures in the reproductive cells are too small to be seen clearly through the ordinary microscope, where the distinctness of the image is limited by the size of the waves of light by which the image is seen.

At the same time the electron microscope, which is capable of much greater magnification because it sees by means of the electron, finds the units of heredity in the cell too large to get into the picture. Scientists are now trying to identify objects of intermediate size to bridge the gap satisfactorily between the two classes of structures.

► **LIFE** is still a mystery. In spite of the strides taken in recent years toward understanding in detail the way life processes work, scientists have not been able to create life.

The goal of making living matter in a test tube seems to recede further with each new discovery. New problems appear as each barrier is overcome.

However, scientists do know that life is a chemical reaction. Living cells are kept going by a continuous supply of the familiar food chemicals, proteins, carbohydrates and fats. The cells contain, in addition, nucleic acids.

Analysis of nucleic acids has shown they are made up of four kinds of nuclear fragments, each containing phosphoric acid and a peculiar kind of sugar called ribose. Four nucleotide bases, joined to the sugar and the phosphoric acid, make the distinction between the four constituents of nucleic acid.

The four nucleotide bases are nitrogen-containing compounds known respectively as adenine, guanine, cytosine and uracil,

which are relatively simple compounds for organic chemicals. All have been synthesized from inorganic material, although for experimental work it is more convenient to obtain them by splitting nucleic acid.

Ribose, the sugar part of the nucleic acid, is chemically a simpler compound than dextrose and levulose, which are the less complex of the sugars used as food. Dextrose and levulose have six carbon atoms to the molecule. Ribose has only five. Its hydrogen and oxygen are in standard carbohydrate proportions, $C_5H_{10}O_5$.

Although the ribose and the phosphorus parts of the nucleic acids are always the same and the same four nucleotide bases are found in equal quantities on analysis, a great variety of ribonucleic acids is found in nature. The differences between these substances are believed to be due to differences in sequence of the nucleotides, in their arrangement within the molecule.

Chemists have tried the effect of introducing other, similar molecular groups into the nucleic acid structure in place of adenine or others of the nucleotide parts of ribonucleic acid. Such a synthesis is chemically practicable but, when the new compound is introduced into a colony of bacteria, growth of the bacteria is hindered.

One school of cancer-fighters hopes to find a way to control such growths by administering abnormal chemicals of this type. The hope is that a compound could be synthesized that would be taken up

(Continued on page 409)



RECORD BREAKING SLED—A world's record, for recoverable sleds, of 1,560 miles per hour was set by this Convair rocket sled on the 10,000-foot high-speed track at Edwards Air Force Base, Calif., one of ten such test centers under the Air Force's Research and Development Command. Tests are being conducted to determine the effect of rain erosion damage on aircraft and missiles at supersonic speeds.

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

► **Ingenieria.**—Peroxido de hydrogeno es usate como fonte de energia in le nove submarino britannico H.M.S. Explorer. Le advantage de iste motores in submarinos es que illos ha nulle visibile gases de escappamento. On dice que le germanos habeva cinque tal submarinos durante le passate guerra. Illos nunquam quitava lor bases proque le germanos non habeva satis peroxido de hydrogeno.

► **Hypnotismo.**—Le prime operation pulmonar con anesthesiation per hypnotismo es reportate ab Los Angeles. Le hypnose esseva applicate per le anesthesiologo Dr. M. J. Marmer. Ille explica que in su opinion le hypnose es un anesthetic quasi ideal. Illo ha nulle effecto toxic e elimina non solamente le dolores physic sed etiam le timores e anxietates del patientes. Comparate con tal advantages, il es negligibile que le anesthesia hypnotic ha le sol vicio que illo non pote esser effectuate rapidamente.

► **Entomologia.**—Le digestion de mosquitos progredie con varie rapiditates in varie species. Un repasto normal de sanguine es assimilate per illos in le curso de periodos de inter 31 e 48 horas. Il es evidente que iste factos, resultante de recercas de Dr. A. K. O'Gower del Universitate Sydney in Australia, es importante quando on vole investigar le mechanismo del morbos que es disseminate per mosquitos. Aspectos curiosos del problema es que le digestion de mosquitos es accelerata quando le numero del horas de obscuritate nocturne es augmentate, quando le temperatura del ambiente monta, e quando (con temperaturas basse) le humiditate atmosferic es elevate.

► **Recercas de Cancere.**—Le exhibitiones scientific monstrate al congresso annual 1956 del Association Medical American includeva un "echographo" pro le diagnose de cancro. Illo emite inaudibile undas acustic de altissime frequentias. Iste undas penetra le corpore ubi illos es variamente reflectite. Lor echo es allora registrate per medios electronic. Le resultante "echogramma" es de grande valor in le diagnose de cancro proque organos normal es minus "reflectente" que massas cancerose, e tumores benigne produce nulle reflexion del toto. Le echographo esseva exhibite per Drs. J. J. Wild e J. M. Reid del Hospital St. Barnabas a Minneapolis.

► **Neurologia.**—Esseva constatate al Universitate Birmingham in Anglaterra que le cellulas nervose del cerebro distende o contrabe lor nucleos secundo que le individuo executa le un o le altere tipo de activitate. Un grande effortio physic—currer per exemplo—allarga le nucleos. Le application de anestheticos, del altere latere, reduce lor dimensiones. Iste factos esseva notate in experimentos con muses.

► **Botanica.**—Un flor de generation atomic ha essite patentate. Il se tracta de un caryophillo blanc que resultava per mutation, sub le influenza de radios gamma de cobalt-60, ab un caryophillo blanc con marmorisation rubie. Le nove varietate se ha mantenite intacte a transverso tres generationes. Illo esseva create accidentalmente in le curso de experimentos biologic con radiation atomic interprende per Dr. W. R. Singleton del Universitate Virginia.

► **Arthritis.**—Un cyclo diurne in le production de hydrocortisona per le glandulas adrenal esseva discoperite per Dr. J. E. Warren del Universitate Pittsburgh. Le production de hydrocortisona attinge su minimo inter 3 e 4 horas del matino. Postea illo cresce abruptemente e attinge su maximo a circa 7 horas. Dr. Warren etiam

constatava que in arthriticos ambe extremos—le minimo e le maximo—es minus marcate. Le reduction del maximo matinal in arthriticos explicarea proque multes inter illos suffre de rigiditate del articulationes quando illes se eveha in le matino.

► **Zoopsychologia.**—On sape que le historias de simias qui lancea cocos e altere objectos contra lor observatores (o attaccatores) human es simple historias. Sed usque recentemente on credeva seriemente que simias in alto de arbores visa cautemente pro assecurar que le objectos que illes lassa cader incontra le objecto de lor displacer. Secundo Dr. H. Setzer, mammalogo del Instituto Smithsonian qui justo reveni ab un expedition in Costa Rica e Panama, simias es incapace a visar. Illes lassa cader lo que illes tene in lor manos sin malevolentia e semper per accidente.

► **Alimentos.**—Le preservation de alimentos per "radiopasteurisation"—i.e. per medio de sterilisation a irradiation atomic—approcha le stadio de practicabilitate commercial gratias a experimentos conducte al Universitate Michigan. In illos le irradiation ha essite combineate con refrigeration. Il pare que alimentos irradiate es immagasinabile durante plure menses a temperaturas de 5 C. Le costo del nove processage es solamente circa un dollar pro 50 kg de alimentos.

► **Gynecologia.**—Le numero del infantes nascite inter 18 horas del postmeridie e 6 horas del matino es quasi identic con le numero del infantes nascite inter 6 horas del matino e 18 horas del postmeridie. Si on divide le die in tres partes de octo horas, le intervallo ab 3 a 11 horas del matino excede le altere duo intervallos in le numero del neonatos produce. Le culmine del curva de nascentias diurne occurre a 5 horas, le nadir a 19 horas. Le culmine excede le nadir per 48%. Iste datos es basate super un statistica de 33,215 casos registrate a cinque hospitales in tres regiones del Statos Unite.

► **Entomologia.**—Un gruppo de scientistas del Universitate Ohio ha constatate que le production de ovos per mosquitos depende de lor dieta. Per le administration de varie distincte dietas experimental certe specific requirimentos proteinic esseva stabilite. Simile recercas ha essite initiate pro determinar le requirimentos de vitaminas in le dieta de mosquitos.

► **Foresteria.**—Le numerosissime incendios forestari occurrente annualmente in le Statos Unite include circa 6000 que es causate per fulmines. Le Prevention de iste tipo de incendio requirerea le prevention de fulmines. Le statounitense Departamento de Agricultura ha initiate un programma de studios del comportamento de fulmines, includente essays a causar un relaxation innocue de nubes fulminifere per inseminar los con iodo de argento. Le production de pluvia per tal inseminationes es nunc generalmente considerate como paucio promittente, sed on spera que iodo de argento pote servir al minus a reducir le potential fulminante de certe tipos de nubes.

► **Expeditiones.**—Un gruppo de scientistas brasilian ab le Departamento National de Production Mineral e ab le Museo Goeldi va reunir se con un gruppo de statounitense collegas de illes qui veni ab le Museo de Historia Natural a New York pro explorar le region del curso superior del Jurua in Brasil. Le duo grupos va comenciar lor expedition cooperative a Cruzeiro do Sul. Lor interesses se concentra specialmente super depositos de fossiles.

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GENERAL SCIENCE

Reading Interlingua

► YOU CAN READ Interlingua if you had no more than one semester of high school French or Spanish or Latin and flunked it. You can read and understand a great deal of it even if you never had contact with any foreign language.

Send this page to an acquaintance abroad and tell him that he can get additional information about Interlingua from Alexander Gode, SCIENCE SERVICE's Interlingua Division, 80 E. 11th St., New York 3, N. Y.

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CARDIOLOGY

Heart Attack Victim Can Co-Pilot Plane

► ONE HEART ATTACK need not bar a man from military service or even from co-piloting a plane, Lt. Col. Philip G. Keil, USAF, and Dr. Leon V. McVay Jr. of the 3810th USAF Hospital, Maxwell Air Force Base, Ala., reported at the American Medical Association meeting in Chicago.

The man who can and should go back to active duty after a heart attack, in their opinion, is the one who has recovered completely, has no symptoms on moderate activity, has a normal sized heart and normal blood circulation.

To restrict the activity of such a man or make an invalid of him may shorten his life as well as reduce his usefulness. If he remains free of symptoms and his heart shows no further damage six months after the attack, he could be returned to flying status as a crew member or as a pilot in primary control in a dual control aircraft with another qualified pilot.

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ACOUSTICS

Typewriter Writes From Spoken Words

► THE BOSS of the future may dictate his letters directly to a phonetic typewriter or speech writer that will type out his words in conventional letters.

A model of such a voice-operated typewriter was described at the meeting of the Acoustical Society of America and the Second International Commission on Acoustics Congress in Cambridge, Mass., by Dr. Harry F. Olson and Herbert Belar of the David Sarnoff Research Center, RCA Laboratories, Princeton, N. J.

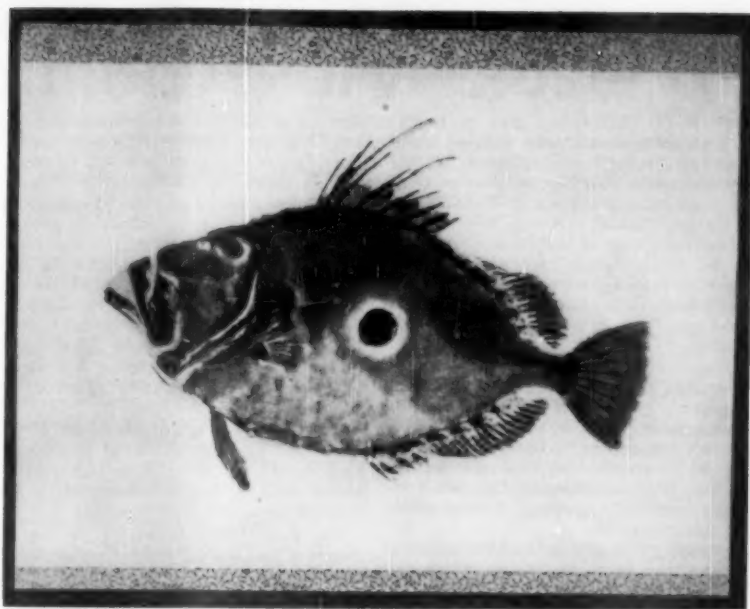
Such a model has already been constructed and has a vocabulary of ten common English words, including "Are see a." It types from dictation with 80% accuracy which, Dr. Olson comments, is "probably as good as the average secretary."

In another report of a "speech writer," Dr. Yuen Ren Chao of the Department of Oriental Languages, University of California, Berkeley, discussed the linguistics.

First step, Dr. Chao indicated, was to analyze speech in terms of "formants." Next problem was the conversion of the energy of speech sounds into a series of visual tokens whose number of types is of the same order as the number of different symbols in a written language.

Developing a machine that will type speech involved the following important factors, Dr. Olson and Mr. Belar told the meeting: the particular form in which the words are typed, the means for analyzing the sounds of speech, identification of the analyzed sounds, translating the sounds into impulses for actuating the machine, and finally design of the mechanism for operating the typewriter.

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A JAPANESE "GYOTAKU"—A Job Dory fish, this representation is the bandiwork of the artist-ichthyologist, Yukoku Shimizu of the organization called *Gyotaku-no-Kai*, meaning Friends of Fish Print, in Japan. A *Gyotaku* is an impression taken of an actual fish, and often proves more useful to scientists than a photograph. In this case, fine, wet rice paper was placed over the fish, then ink or paint was applied to the paper. An exhibit of *Gyotaku* is on view at the American Museum of Natural History in New York.

ANTHROPOLOGY

"Abominable Snowman"

► THE "ABOMINABLE SNOWMAN," legendary creature of the Himalayan peaks, is probably really the Himalayan red bear, Dr. William L. Straus Jr., anthropologist of the Johns Hopkins University, Baltimore, reports in *Science* (June 8).

The "abominable snowman" is known only through travelers' tales and gigantic manlike footprints left in the snow at heights of from 10,000 to 21,000 feet above sea level.

"It must be emphasized," Dr. Straus states, "that there is no record of any 'snowman' ever having been captured—either alive or dead—or even photographed."

The animal footprint most commonly mistaken for that of man, he suggests, is that of the bear. There are three varieties of bear in the Himalayan region, black, brown and red. The red bear is known to walk on its hind legs like a man and, when erect, is said to be as tall or taller than a tall man.

A factor in the start of the "abominable snowman" legends is due to a mistranslation of Tibetan words by foreigners. The Himalayan red bear is known locally as *mi-te*. Himalayan expeditionists have mistranslated the word *mi-te* as abominable,

filthy, dirty. The word actually means "man-bear." Another name for the animal is *kangmi*, which has been translated as "snowman."

"Abominable snowman" has been derived from the combination of the two mistranslated words, "mitch-kangmi."

The size of the great footprints has been exaggerated and distorted by the melting of the snow around the edges and by the action of wind.

According to the Rev. Swami Pranavananda, who has made a study of the giant footprints, the red bear is not the only mammal that frequently makes excursions far onto the snow fields and glaciers, apparently in search of food.

The wild yak, Tibetan wild horse, lynx, snow leopard, wolf, ibex, bharal, ghural, Tibetan antelope, musk-deer, and other animals do likewise, for vegetation can occur up to an altitude of 20,000 feet or more.

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There is no known cure for hog cholera.

The worst enemy of the sport fisherman in the United States today is plain mud.

PATHOLOGY

Type Intestinal Germs

► **HOW TO TELL** which germ has caused a particular intestinal upset is being made easier by tests and a classification scheme reported at the First North American Conference of Medical Laboratory Technologists in Quebec, Canada.

One big group of these germs are rod-shaped germs named *Salmonella* after an American pathologist, Daniel Elmer Salmon. The diseases these cause range from typhoid fever and the para-typhoid fevers to food poisoning.

There are 500 different types of these salmonella bacteria that can cause intestinal infections, Dr. Fritz Kauffmann, director of the International Salmonella Center at Copenhagen, reported. Dr. Kauffmann set up the internationally used Kauffmann-White scheme for differentiating and labeling types of bacteria that look alike under the microscope.

Instead of classifying bacteria infecting the intestinal tract into families and species, bacteriologists now group them on the basis of their reaction to chemicals, and distinguish types within the groups by the reactions they stimulate in the blood of animals. Identification can sometimes be checked by the known reaction of the type to various sugars.

Dr. Kauffmann's scheme has room for 3,000 different types in the salmonella group alone, and for hundreds of thousands of different types of the coli bacteria respon-

sible for epidemics of diarrhea among newborn babies in hospitals. Broader use of more delicate testing methods will fill many of these places, Dr. Kauffmann believes.

The most common 12 types of salmonella account for about 90% of salmonella disease, but precise "fingerprinting" of the rarer ones has proved a valuable clue to epidemics. When outbreaks of enteric disease in several European cities were traced to a type of salmonella prevalent in the United States, public health detective work, establishing that all those stricken had eaten powdered eggs shipped from America, led to a cleanup.

Identification of a rare salmonella in the stools of a Copenhagen victim of stomach upset traced her infection to bananas imported from the Belgian Congo, where the type has previously been reported.

Dr. Kauffmann's laboratory in Copenhagen is the World Health Organization's clearing house for new types of salmonella found all over the world.

Better methods of detecting and identifying these intestinal germs, which infect animals also, show that intestinal infections once considered typical of the tropics are actually common in temperate and Arctic climates. Dr. Harold J. Fournelle, U. S. Public Health Service scientist stationed in Alaska, for example, has found many cases of enteric disease among Eskimos.

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BIOPHYSICS

Spleen Blood Protects Against Radiation

► **BLOOD PLASMA** freshly drawn from the spleen will protect against radiation, Drs. Bruce R. Allen, H. Gwendolyn Wardell and Michael Clay of Columbia University's Radiological Research Laboratory find.

Their studies were made with rabbits. Blood right from the spleen of donor rabbits was centrifuged and cell-free plasma obtained. It was injected into other rabbits as soon as possible after they had been given a whole-body dose of X-rays of 1,000 roentgens. At the end of 30 days, 24% of rabbits given spleen blood plasma were still living, compared to four percent of rabbits given the same X-ray dose without the plasma.

Because shielding the spleen of an animal during radiation protects the animal, it has been thought that the spleen produces an anti-radiation substance. If so, it should be found in higher concentration in blood leaving the spleen.

To test this point, the Columbia scientists made their studies under an Atomic Energy Commission contract.

The protective action in the spleen blood plasma "is very definite," they state in *Science* (June 15).

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• RADIO

Saturday, July 7, 1956, 1:45-2:00 p.m. EDT
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Prof. Rahel Shalom, associate professor of civil engineering, Israel Institute of Technology, Haifa, will discuss "Engineering in Israel."

TECHNOLOGY

Radioactive Soda Bicarb Saves Holes in Street

► **A LEAKING WATER MAIN** under a main street no longer means traffic chaos in Britain, while laborers search with pickax and shovel for the fault.

City councils now call on Harwell atomic scientist, Miss Anne Wildblood.

In place of the pickax, 30-year-old Miss Wildblood works with an eight-foot, chromium-plated Geiger counter pole. Her atomic counterpart of the shovel is a handful of radioactive sodium bicarbonate tablets.

In jodpurs and riding coat, Miss Wildblood searches for leaks in water mains and oil pipelines.

The water in the mains is made harmlessly radioactive with the sodium bicarbonate. Then small holes are bored in the road for Miss Wildblood to reach the mains with her Geiger pole. When it finds the spot where water has leaked, it registers positive radioactivity.

Only where the exact point of the leak has been found does the road have to be dug.

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TV OPTICAL TOOLING—A closed circuit television system that can cut costs and speed production of supersonic fighter-bombers has been developed by Republic Aviation Corporation. Previously a two-man operation in an optical tooling process, now the TV camera automatically "looks" through the telescope while the operator positions jig contour plates by lining up cross-hair patterns as they appear on the TV screen.

ASTRONOMY

Mars Coming "Very Close"

The red planet, long a favorite object for study and speculation, is coming closer to earth. Astronomers await "very close" approach to earth on Sept. 7.

By ANN EWING

➤ MARS, the bright ruddy planet long studied by man, will make its closest approach to the earth since 1924 next Sept. 7, when it will be a mere 35,120,000 miles away.

Around the world astronomers will aim their telescopes at Mars in the hope of learning some of its secrets, for not until 1971 will the planet again be in as favorable a position for observation. In 1924, it was 34,700,000 miles away, its closest approach of this century.

Far reaching consequences are foreseen if conclusive evidence of life in even such low forms as moss and lichens is discovered. Although many astronomers now believe the changes seen on the Martian surface are due to vegetation, this is not yet proved.

If the markings are shown without doubt to be vegetation, it would mean that life is not unique to the earth and that there is a good chance of finding life of some form on other planets circling other suns.

Satellites Found in 1877

Relatively favorable close approaches of Mars occur every 15 or 17 years, but there is also a much more nearly exact repetition of close approaches every 79 years. The 1956 event will thus closely match the historic one of September, 1877, when Asaph Hall of the U. S. Naval Observatory discovered the two satellites of Mars, Phobos (panic) and Deimos (fear).

It was also at this time that the Italian astronomer G. Schiaparelli started observing the curious and still controversial surface markings he labeled "canali," and now called canals.

No photograph of Mars ever taken shows these fine lines and most astronomers do not detect them when they study the planet visually. Some observers, however, report that the "canals" form a complex network covering the Martian surface. One explanation of these discrepancies is the personal element involved in seeing and judging detail of any small object at a distance.

When close, Mars shows a face about one-seventieth as broad as the full moon. A telescope of moderate power would magnify Mars to about the moon's size to the unaided eye. Some idea of the difficulties involved in studying the Martian surface can be obtained by trying to picture details of the lunar surface at full moon without even binoculars.

The problem of life on Mars will probably not be solved until astronomers can

mount a telescope on a platform in space, then recover the photographs taken, or actually ride it themselves to get a view of the solar system and the rest of the heavens unhindered by the earth's shimmering atmosphere. Such possibilities are still far in the future, however, and the first astronomical observations to be made from the man-made satellites to be launched during the International Geophysical Year will be of the kind from which results can be radioed back to earth.

Dress Rehearsal in 1954

A full dress rehearsal of observations of Mars to be made this year occurred two years ago, when the planet was 39,800,000 miles away.

The world-wide photographic patrol, set up by the International Mars Committee in 1954, will be continued this year from at least 20 observatories. Dr. E. C. Slipher of Lowell Observatory, Flagstaff, Ariz., has reported. Dr. Slipher is now in South Africa, where he and Dr. Paul Wild of Berne, Switzerland, will study Mars as it crosses the night sky almost directly overhead at Bloemfontein in South Africa. The expedition is sponsored by the National Geographic Society and Lowell Observatory.

Mars can be seen low in the southeast, rising about 11:00 p.m. standard time, but each day it comes up earlier so that, by the end of July, it will rise about two hours

after the sun has set. Its magnitude on July 1 is minus 1.0 on the astronomical scale, so it is one of the brightest objects in the sky. This, combined with its ruddy color, makes it easy to spot.

By Sept. 1, Mars will have brightened to magnitude minus 2.6. An object whose magnitude differs by 1.0 from another object is either about two and a half times brighter or dimmer.

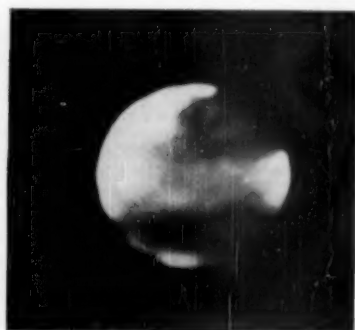
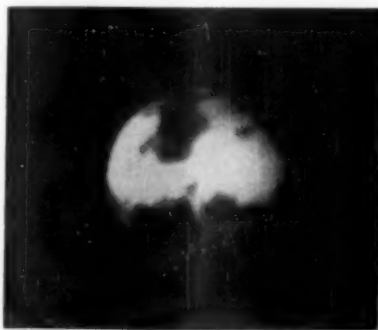
Martian Weather Maps

One important project scheduled for this year's close approach is the plan to draw weather maps of Mars. Some 30 observers scattered around the world will keep the planet under continuous scrutiny, watching and mapping any changes in its faint atmospheric belts.

In 1954, Dr. Slipher and his co-workers discovered an entirely new blue-green region, covering approximately 200,000 square miles, or a little less than the size of Texas, on the planet's surface. Variations in the size, color or position of this new region will be searched for carefully, since it represents the greatest change in Martian geography yet observed.

Changes that are well known are the growth and shrinkage of the polar caps, the most conspicuous features of the Martian surface. The southern cap reaches a maximum diameter of about 3,700 miles, the northern one, 3,100 miles. The south polar cap sometimes disappears entirely, but the northern one never shrinks to less than about 200 miles in diameter.

The caps, once thought to be composed of solid carbon dioxide, are now believed to be made of a thin layer of ordinary ice



MARS IN VIEW—These photographs taken with the 200-inch Hale telescope atop Mt. Palomar in California show two views of Mars, one on plates particularly sensitive to blue light, the other, to red light. The blue-light photograph, left, records variable atmospheric conditions, and clouds or haze. At top and bottom are the polar caps which appear in the Martian fall season and almost disappear in the spring. The red-light photograph, right, shows the permanent surface features of Mars. The large dark areas were mapped by the earliest visual observers and are well known.

or snow that has been condensed at a low pressure and very low temperature. Dr. Gerard P. Kuiper of Yerkes Observatory, Williams Bay, Wis., calculates the layer may be less than one inch thick.

From the polar caps, huge dark areas extend toward the planet's equator. These are well known, having been mapped by the earliest visual observers.

Although motion picture studies of Mars were tried with the 100-inch Mt. Wilson telescope in 1954, in the hope of making at least a few photographs at an instant when the earth's atmosphere stopped shimmering so that Martian surface details would show, they probably will not be attempted this year because the method was not too successful.

The 20,000 photographs taken by Dr. Slipher in South Africa showed more detail.

No TV-like Instruments

Instruments that combine television-like devices with the telescope to step up seeing ability are not expected to be sufficiently perfected to use in viewing Mars this year.

The red planet is next in order from earth out from the sun. It takes 687 days to revolve once around the sun, compared to the earth's 365. Every 780 days, the earth catches up with Mars and passes it.

If the orbits of the two planets were circles, the earth would always pass Mars at the same distance from it. The paths are elliptical, however, so the distances can vary from about 63,000,000 miles to 34,500,000.

Like the earth but unlike the moon, Mars spins rapidly on its axis, and a Martian "day" is only 37 minutes longer than a day on earth.

The Martian atmosphere, 99% composed of nitrogen and argon, is much less dense than the earth's. Its pressure at ground level has been estimated as equal to about

2.5 inches of mercury, compared with 30 inches for the earth. Judging from photographs taken through violet and infrared color filters, height of the red planet's atmosphere is thought to be about 60 miles.

In contrast to the earth, clouds are rare on Mars, but have been observed many times. In 1954, an enormous W-shaped cloud lasted for about a month, evaporating every morning and re-forming every afternoon.

Search for Blue Clearings

Although the Martian atmosphere usually does not allow blue or violet light to penetrate it, on occasions the atmosphere suddenly becomes transparent to these shorter light waves. Such events, known as blue clearings, are seen at some, but not all, close approaches of Mars to the earth. The cause of blue clearings is not known.

One puzzle observations this year may settle is that of the planet's composition. What is needed is an exact, direct measurement of its diameter, now believed to be a little more than 4,200 miles, or slightly more than half earth's. Knowing the diameter, scientists could use a well-known formula to deduce its composition, possibly resulting in a revision of theories on the origin of the planets and the solar system.

The Martian temperature rises to as high as 50 degrees Fahrenheit during the day at the equator, and drops to 80 to 100 degrees below zero Fahrenheit by night.

The satellite Phobos is unusual in that it is the only one known with a period of rotation shorter than its primary. Therefore, as seen from the Martian surface, it rises in the west and sets in the east, completing its strange backward daily revolution in about 11 hours. Deimos takes nearly 132 hours in its daily circuit, rising in the east and setting in the west as seen from Mars.

Science News Letter, June 30, 1956

BIOCHEMISTRY

Gas Gangrene Remedy

► **DISCOVERY** of a chemical that may become a remedy for gas gangrene, dangerous and often deadly result of dirty, infected wounds, is announced by Drs. Merwin Moskowitz, Merwyn W. Deverell and Ramon McKinney of Purdue University, Lafayette, Ind., in *Science* (June 15).

The chemical is EDTA, short for ethylenediamine tetra-acetic acid. It is known to chemists as a chelating agent with the power to bind calcium and other metals.

Gas gangrene is caused by the toxin or poison of the organism, *Clostridium perfringens*. The alpha toxin, or poison, believed the most important lethal factor of this organism or germ, is an enzyme, a lecithinase.

This enzyme is activated by calcium. So the Purdue scientists decided to try EDTA as an antidote to the gas gangrene poison,

with the idea it would bind calcium in the body and thus prevent the enzyme from being activated and poisonous.

When given to mice with the gas gangrene poison, it "consistently protected" them against a fatal dose. It was also able to protect the animals against a lethal dose of the toxin-producing germs, but the results were not so consistent. The variability may be due to variation in the virulence of the germs used in the tests. Further tests on this point are being made.

EDTA is not poisonous to animals or humans unless given in amounts binding so much calcium that tetany and convulsions result. It has been used in cases of lead poisoning. Its possible use in treatment of gas gangrene, the scientists state, "is obvious."

Science News Letter, June 30, 1956

BIOPHYSICS

Test Red Blood Cell Survival in Cirrhosis

► **A SENSITIVE TEST** for red blood cell destruction in patients with cirrhosis of the liver has resulted from atomic age medicine.

In a significant proportion of patients, the red blood cells do not live as long as in normal patients. Drs. Frances Ann Allen and Arthur P. Klotz of Kansas City, Mo., found from the new test.

The test is made with red blood cells tagged with radioactive chromate so their survival time can be determined.

In advanced cases of cirrhosis of the liver, hemoglobin separates from the red blood cells and appears in the fluid part of the blood.

Scientists have known this for some time. Previously, however, they have not been able to tell whether this hemoglobin leakage from the red cells occurred in less severe cases of cirrhosis.

Results of the new test suggest that this does happen. The test was described at the meeting of the Society of Nuclear Medicine in Salt Lake City.

Science News Letter, June 30, 1956

PSYCHOLOGY

Iron Lung Patients Affected Mentally

► **LIFE** in an iron lung can temporarily affect the mental functioning of patients, Drs. J. H. Mendelson and J. M. Foley of Boston reported at the American Neurological Association meeting in Atlantic City.

They discovered this during last summer's polio epidemic in Massachusetts. After patients had been in the iron lung, or tank-type respirator, for two to seven days, they lost their bearings and were confused as to who they were, where they were and what time it was.

They thought they were moving about the hospital in the respirator or, more often, thought they were riding in a car, train or airplane. Sometimes the patients took all this calmly, but at times they were agitated.

Most of them during lucid intervals recognized that these experiences were not real, but some of them were confused about what was real and what was unreal. After they had recovered, they remembered the experiences with "most remarkable vividness."

Changing the physical environment could reduce or relieve these delusional symptoms to some extent.

The condition lasted 10 to 15 days and was not related to fever, drugs, location or degree of paralysis, lack of oxygen or other physiologic conditions.

The Boston doctors consider it a disorder of perception secondary to the restriction of environment in the tank-type respirator. Other polio patients treated outside the iron lung did not develop it.

Science News Letter, June 30, 1956

Gene Obsolete Term

(Continued from page 403)

preferentially by the cancer tissue, but that would then block the path by which the cancer tissue receives nutrients. A satisfactory compound of this nature has not yet been perfected.

Reconstituted Viruses

The offspring of viruses that have been taken apart, into their inorganic constituents, and then put back together, into the most primitive form of living matter, breed true.

Announcement of this fact, which clinches the proof that the tobacco mosaic virus is the same after its reanimation as it was before, was made by Drs. H. Fraenkel-Conrat and Robley Williams of the University of California. The California scientists spoke at the McCollum-Pratt Institute's symposium on the chemical basis of heredity, held at the Johns Hopkins University, Baltimore.

These scientists succeeded in March, 1955, in recombining the protein and nucleic acid of the tobacco mosaic virus to reconstitute the living organism. They reported this achievement to the National Academy of Sciences in October, 1955. (See SNL, Nov. 5, 1955, p. 292.)

Not enough time has passed to allow Dr. Fraenkel-Conrat and Dr. Williams to determine whether the virus offspring of the reconstituted colony will differ from the parent stock in the number and kind of mutant strains produced.

Plant viruses are noted for maintaining the function of reproducing their kind, a fundamental criterion of living matter, without having a supply of the life chemical known as DNA in their makeup.

DNA is the abbreviation for the chemical name deoxyribonucleic acid. This chemical is found in the reproductive cells of plants and animals, and is believed associated in a fundamental way with the mechanism of heredity.

In plant viruses, a similar chemical compound, RNA, ribonucleic acid, is the main

life chemical. The two compounds differ in the simplest form of their chemical constitution by only one atom of oxygen.

Duplication of this simplest form of structure into polymerized molecules of large size is, however, a characteristic of living matter.

Experiments in building up nucleic acids in the laboratory by means of an enzyme extracted from bacteria were described to the symposium by Dr. S. Ochoa of New York University. This enzyme has the ability of linking together the component parts of nucleic acids through the phosphorus and the ribose sugar they contain.

Through this reaction Dr. Ochoa is able to study the differences in nucleic acids, which are due to the orders of sequence of the nucleotides of which they are built. He can also vary the chemical groups in such life chemicals to include similar compounds not found in nature.

The fact that living tissues can take up substitute chemicals in place of nucleic acids but cannot use them as food gives hope of making immunizing chemicals in this way to protect against communicable diseases or possibly find use in combating cancer.

Science News Letter, June 30, 1956

GENERAL SCIENCE

Vault to Carry Present Into Next Century

► A VAULT that is scheduled to be opened a hundred years from now has been placed beneath a walkway in front of the George Washington University's new Tompkins Hall of Engineering to contain objects, publications and other records that will bridge one century with the next.

Dedicated to the donor of the new engineering building, Charles H. Tompkins, a Washington builder, the vault includes in its contents an issue of SCIENCE NEWS LETTER and several units of experimental Things of Science kits.

Science News Letter, June 30, 1956



Wrist Radio Weighs 2.5 oz.

All-transistor wrist radio receiver

A broadcast band all-transistor wrist radio has been designed with r-f reflex circuit to provide good selectivity and sensitivity. Three transistors are used which require 4.5 ma total battery current and five button-size mercury cells last up to 100 hours. The receiver features a 2-stage transformer-coupled audio amplifier and a no-whistle regenerative circuit. A high quality hearing aid receiver allows for private listening. Printed circuitry is used throughout. Band coverage is 550 to 1600 kc. Its small size (2 3/4 in. long, 1 3/4 in. wide and 3/4 in. thick) and weight (2.5 oz. with batteries) make it well suited for wearing on the wrist or in a shirt pocket. Completely assembled with all batteries.

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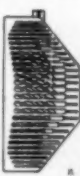
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PHYSICS

Neutrinos Confirmed

► "LOST" ENERGY of the universe may be found in neutrinos formed by stars.

Learning how much of the energy in the universe is held by neutrinos would be of "great importance," Dr. Willard F. Libby, acting chairman of the U. S. Atomic Energy Commission, said. He suggested the amount may be estimated in future experiments following those confirming the neutrino's existence.

Discovery of the neutrino, an uncharged atomic ghost particle so small it has practically no mass, was announced at the American Physical Society's meeting in New York in 1954. (See *SNL*, Feb. 13, 1954, P. 99.)

Atomic Energy Commission scientists under the direction of Drs. Frederick Reines and Clyde Cowan, Jr., have now confirmed their original discovery by further experiments conducted at the AEC's Savannah Plant in South Carolina.

Their work culminates a long search for the elusive particle, whose existence was suggested more than 20 years ago by two Nobel Prize winners, Wolfgang Pauli and the late Enrico Fermi. Drs. Reines and Cowan used the same method in their original discovery and in the confirming studies just reported, a giant scintillation counter constructed to be extremely sensitive to reactions caused by neutrinos.

A neutrino, which is Italian for little neutral one, reacts only very weakly with matter, and could easily pass through the entire mass of the sun without change. Its existence was suggested in order to explain otherwise apparent contradictions in the law of conservation of energy in beta disintegration, important in many atomic transformations.

Although indirect evidence had long ago convinced most physicists that neutrinos

actually exist, the tiny chargeless particle had previously escaped the direct detection necessary to prove its existence in the free state away from the radioactive atom from which it is emitted.

Science News Letter, June 30, 1956

ENTOMOLOGY

Mosquitoes Eat in One to Five Minutes

► YELLOW FEVER MOSQUITOES take one to five minutes to eat.

They can get their food much faster if they drill into a person's capillary than if they tap a blood pool in the tissues.

Seventy-five British medical students let themselves be bitten a total of 140 times by *Aedes aegypti*, or yellow fever mosquitoes, and scientists timed the insects at their meal. The disease-carriers took an average of about three minutes to satisfy themselves.

The average capillary feeder finished after about two minutes, while the pool drinkers needed twice as long.

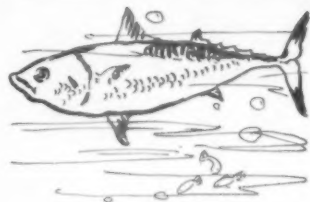
The experiment by zoologist Fergus J. O'Rourke of University College, Cork, Ireland, is reported in *Nature* (June 9).

Science News Letter, June 30, 1956

BIOLOGY

NATURE RAMBLINGS

by Horace Loftin



The Travelers

► WHEN IT COMES to getting some place in a hurry, the free-moving creatures of the air and the oceans have a decided advantage over land-bound animals. Some land animals may migrate hundreds of miles in a season, but birds and bats of the air, and fish, whales and seals of the oceans may cover thousands of miles with their urge to move.

On Oct. 5, 1954, scientists with the U. S. Fish and Wildlife Service tagged an albacore tuna 1,300 miles north of Hawaii. Then, 471 days later this same tagged tuna was recaptured near Japan—2,370 miles away from the point at which it was released.

Travel seemed to work no hardship on this fish. It weighed only 15 pounds when it was tagged. When the fish was recaptured, it was found to weigh 40 pounds.

FWS scientists believe the albacore tuna of the North Pacific may all belong to a single population that migrates regularly between the coasts of the United States and Japan. They have recaptured only one other tagged albacore tuna, however, to back their theory up to now. This was a fish tagged off California some three years ago and retaken near Tokyo.

Many seal species are vast wanderers. Female Pribilof seals and their new pups swim some 3,000 miles each year from their breeding grounds in the Bering Sea to waters near southern California, and make the return trip in the spring.

Whales are credited with long voyages. Some species are thought to travel from Arctic to Antarctic waters, and it is believed that there are whales that possibly circumnavigate the globe.

The wanderings of many birds are measured in the thousands of miles, also. Some oceanic birds are seen hundreds of miles from the nearest land, while there are migrant birds that go each year from north of the Arctic Circle to as far south as Patagonia.

Even those flying mammals, the bats, have representatives that travel great distances. Two species have evidently crossed 2,500 miles of open ocean to establish themselves in the Hawaiian Islands.

Science News Letter, June 30, 1956

Questions

ACOUSTICS—What factors are important in building a machine to type directly from speech? p. 405.

□ □ □

ASTRONOMY—What would be effects of definite proof of life on Mars? p. 407.

Who is the first woman professor of astronomy at Harvard University? p. 402.

□ □ □

BIOCHEMISTRY—Why is the term for gene believed obsolete? p. 403.

□ □ □

GEOPHYSICS—How could an ice-free Arctic Ocean affect North America's climate? p. 402.

□ □ □

PATHOLOGY—How are bacteria causing intestinal upsets classified? p. 406.

□ □ □

PSYCHOLOGY—How does being in an iron lung affect polio patients? p. 408.

□ □ □

TECHNOLOGY—How can radioactive sodium bicarbonate cut down traffic difficulties? p. 406.

□ □ □

Photographs: Cover, U. S. Coast Guard; p. 402, Harvard University; p. 403, Conair; p. 405, American Museum of Natural History; p. 406, Republic Aviation Corporation; p. 407, Mt. Wilson and Palomar Observatories; p. 412, Ack-Ack, Inc.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AN ATLAS OF ANIMAL ANATOMY FOR ARTISTS—W. Ellenberger, H. Baum, and H. Dittich—*Dover*, 2d rev. ed., 153 p., illus., \$6.00. A new edition, edited by Lewis S. Brown, of a German work first published in five volumes in 1901.

COLLEGE CHEMISTRY—Andrew J. Scarlett—*Holt*, 499 p., illus., \$5.50. A new text based in part on Richardson's "Brief College Chemistry." No attempt has been made to cover all descriptive inorganic chemistry, but most of the important industrial processes are described.

THE EVOLUTION OF THE IGNEOUS ROCKS—N. L. Bowen with a new introduction by J. F. Schairer—*Dover*, 334 p., illus., paper \$1.85, cloth \$3.75. Inexpensive student edition of a geologists' reference work first published in 1928.

THE HUMAN BODY: Its Anatomy and Physiology—C. H. Best and N. B. Taylor—*Holt*, 3d ed., 723 p., illus., \$6.75. A new edition, greatly altered and expanded, of a famous text.

MAN IN SEARCH OF HIS ANCESTORS: The Romance of Paleontology—André Senet, translated by Malcolm Barnes—*McGraw-Hill*, 274 p., illus., \$5.50. A readable account of the development of the science of prehistory, from its start with the finding that the "thunderstones" found in France were made by man.

THE MEANING OF THE DEAD SEA SCROLLS—A. Powell Davies—*New American Library*, 137 p., illus., paper, 35 cents. A clergyman writes this story of the discovery of the now-famous Dead Sea scrolls by a Bedouin in a cave by the Dead Sea, describes them, and interprets their meaning for archaeology and religion.

THE MENTALLY RETARDED PATIENT—Harold Michal-Smith—*Lippincott*, 203 p., \$4.00. Written for physicians by a psychologist because "the mentally retarded patient is a person who

cannot be understood without a view of his psychological situation." Lack of normal intelligence, the author points out, is not itself an illness, but it can result in a type of personality that raises many problems.

NINEVEH AND THE OLD TESTAMENT—André Parrot—*Philosophical Library*, Studies in Biblical Archaeology No. 3, 96 p., illus., \$2.75. Exploration of Nineveh has been going on for a hundred years. Here a French archaeologist relates archaeological evidence unearthed with records in the Old Testament.

OPERATIONS RESEARCH FOR MANAGEMENT: Volume II, Case Histories, Methods, Information Handling—Joseph F. McCloskey and John M. Copping, Eds., introduction by The Earl of Halsbury—*Johns Hopkins Press*, 563 p., illus., \$8.00. Including papers on actual problems handled by organized groups. Covering a great variety of problems from a study of traffic delay at toll booths to combat stress in Korea.

ORGANIC CHEMISTRY—Louis F. Fieser and Mary Fieser—*Reinhold*, 3d ed., 1112 p., illus., \$10.00. The period since the last edition of this famous text has been particularly rich in new developments. In some cases previous concepts have been so altered as to require complete rewriting.

THE OUTLOOK FOR NUCLEAR POWER IN JAPAN—Michael Sapir and Sam J. Van Hyning—*National Planning Association*, Reports on Productive Uses of Nuclear Energy, 172 p., illus., paper, \$3.00. Japan is today a predominantly hydro-based economy. This study recommends immediate planning for atomic power.

PHASE CONTRAST MICROSCOPY IN THE EXAMINATION OF STARCH GRANULES—Helen B. Wigman, William W. Leathen and Martha J. Brackmeyer—*Mellon Institute*, 6 p., illus., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa. The phase contrast microscope provides a sharper tool for the study of these industrially important granules than become transparent on expansion.

POLYESTERS AND THEIR APPLICATIONS—Bjorksten Research Laboratories—*Reinhold*, 618 p., \$10.00. This book does not cover theory, but is a survey of the entire polyester field from raw materials to fabricated product.

PRECISION ELECTRICAL MEASUREMENTS—P. Dunsheath, Chairman—*Philosophical Library*, illus., \$12.00. Proceedings of an international symposium held at the National Physical Laboratory in Teddington, England.

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON THE PEACEFUL USES OF ATOMIC ENERGY HELD IN GENEVA 8 AUGUST-20 AUGUST 1955: Volume 5, Physics of Reactor Design—*United Nations (Columbia University Press)*, 545 p., illus., \$9.00. Summarizing what is so far known.

RADIATION DOSIMETRY—Gerald J. Hine and Gordon L. Brownell, Eds.—*Academic*, 932 p., illus., \$22.00. For those working with applications of radiation to medical, industrial and research problems. The techniques and hazards are similar in all these fields.

A SECOND COURSE OF LIGHT—A. E. E. McKenzie—*Cambridge University Press*, 342 p., illus., \$3.50. The third volume in a series of physics texts by the author. Presentation is

kept simple for the high-school student, but each topic is carried on to university level.

THE SPONGILLA-FLIES, WITH SPECIAL REFERENCE TO THOSE OF THE WESTERN HEMIPIPERE (SISYRIDAE, NEUROPTERA)—Sophy I. Parfin and Ashley B. Gurney—*Smithsonian*, Proceedings U. S. National Museum 3360, 109 p., illus., paper, free upon request direct to publisher, Washington 25, D. C. The first comprehensive treatment of these parasites on fresh-water sponges for the Western Hemisphere.

TOWARD A UNIFIED THEORY OF HUMAN BEHAVIOR—Roy R. Grinker, Ed., assisted by Helen MacGill Hughes—*Basic Books*, 375 p., illus., \$6.50. Growing out of a series of conferences called to bring together scientists from several disciplines for the purpose of working toward a unified theory. This volume is an abstraction of about 1,600 pages of transcript.

Science News Letter, June 30, 1956

ZOOLOGY

Rare Mammal Joins Bronx Zoo

► A RARE, little-understood mammal is on exhibition at the Bronx Zoo in New York.

Called an olingo, the long-tailed, cat-sized creature is a native of Panama. It is the first ever shown at this zoo and one of the few to occupy any zoo since its discovery 80 years ago.

Not much is known about how olingoes exist. They travel with bands of kinkajous and are thought to feed chiefly on fruit.

Science News Letter, June 30, 1956

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✿ **GARDEN PRUNER** looks and works like a pistol, complete with grip and trigger. It is lightweight for the lady gardener. When the trigger is squeezed, a high-test steel blade slices the limb. Its eight-inch barrel also makes it easy to pick flowers.

Science News Letter, June 30, 1956

✿ **PRECISION CALCULATOR** designed for businessmen, engineers and scientists can also be used by children for their math homework. The hand-size calculator can be used for addition, subtraction, multiplication, square and cube roots, division, percentages and solving equations.

Science News Letter, June 30, 1956

✿ **SIGNAL CONTROL** automatically sets off the town noon siren. The control is an hourly selective signal timer with a second dial adjustable for from two to 25 seconds. The device can also be fixed so it will not set off a siren on Sunday or any other day, and still work on the signal days.

Science News Letter, June 30, 1956

✿ **THICKNESS GAGE** requiring no power is a permanent magnet type that can be used for measuring the thickness of paint and other non-magnetic materials. Measuring from zero to 60 mils, the gage has adjustable limit pointers. The easy-to-read gage comes in a leather carrying case.

Science News Letter, June 30, 1956



✿ **TOY GUNS** for children of all sizes rapidly fire harmless plastic balls. The play weapons, shown in the photograph, feature stocks, grips and ball-type ammunition made from acetate plastic. The guns are available in rifle, machine-gun and pistol models.

Science News Letter, June 30, 1956

✿ **PHOTOGRAPH MARKER** prints identifying numbers on photographic materials. Film, plate or printing paper is placed over a small opening in the marker and a switch is closed. When the emulsion is developed, the serial number appears. The counter is reversible and can be set from five zeros to five nines.

Science News Letter, June 30, 1956

✿ **FISHING CLEETS** are described as clinging like leeches on slippery rocks in fast water. The cleets are made of a metal alloy and are fitted with buttons that dig and hold on slime and moss. They are available in three sizes for boot sizes from six to 11 and up.

Science News Letter, June 30, 1956

✿ **DRAWER GUIDES AND GLIDES** are made from nylon and are designed to make drawer opening and closing easy. The plastic helps eliminate lubrication and can be installed with nails or by air powered staple guns. They are available in sets for professionals and for do-it-yourselfers.

Science News Letter, June 30, 1956

Do You Know?

The Atlantic salmon has been a staple food since the days of the cave man.

The length of the Suez Canal is 105 miles from Port Said lighthouse to the Suez Roads.

Because lightning usually takes the shortest path to the ground, it is likely to strike tall buildings, trees and water tanks.

A specimen for study under the electron microscope must be no "thicker" than .000003937 inch.

Stainless steel is said to be superior to most other metals in its immunity from radioactivity.

Stone age man knew how to polish his tools with sand or emery.

Fluorescent lamps made in the United States during the past 18 years, if wired together and illuminated, would form a line of light from the earth to the moon and back again, a distance of nearly 478,000 miles.

In Delhi, India, the salt consumed is made from sea water and has a high content of fluoride, accounting for a low rate of tooth decay there.



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